Massachusetts, and Pennsylvania.[106] These efforts also may well be preempted by FCC action (or an affirmative decision not to act) on the third party access issue.

4. Developments in Other Countries

Canada and Brazil have directly addressed the third party access issue, and both have required cable systems to support third party access.

On a per capita basis, Canada is the world leader in cable modem penetration, both in the percentage of homes to which the service is available and the "take up" percentage of users opting to obtain service. The Canadian Radio-television and Telecommunications Commission ("CRTC") – the Canadian equivalent of the U.S. Federal Communications Commission – first ordered third party access in January 1996. Its order expressly covered, but did not extensively discuss, the Internet.[107] In July 1998, the CRTC more specifically reaffirmed cable providers' obligation to support third party ISP access.[108] Implementation of third party access, however, has not yet been finalized, and ISPs in Canada have accused the cable industry of dragging its feet. To pressure the cable industry, the CRTC ordered in September 1999 that cable providers make high speed Internet access available for resale by third party ISPs until such time that full third party access is implemented. Thus, although third party access has been the rule in Canada for some time, it has yet to be implemented broadly.

In November 1999, the Brazilian communications regulator, Anatel, ordered that cable systems support access by third party ISPs, but details of implementation of such access have yet to be finalized.[109]

D. The Historical Context of Cable Regulation

The FCC twice looked at the emerging cable industry in the 1950's, and both times decided against imposing common carrier obligations or other regulations on cable operators.[110] In 1958, the later of the two decisions, the FCC declined to impose common carrier regulation in part because cable subscribers did not select the particular messages that the cable system would carry (as subscribers do, for example, when they place a phone call).[111]

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[106] *See, e.g.*, "Voters may sound off on high-speed Net plans," CNET News (Aug. 6, 1999), <http://news.cnet.com/news/0-1004-200-345792.html?tag=st.ne.1002>.
[107] *See* Telecom Decision CRTC 96-1, Jan. 30, 1996.
[108] *See* Telecom Decision CRTC 98-9, July 9,. 1998.
[109] *See* Anatel Gives Green Light for ISP via Cable TV, South American Business Information, Nov. 26, 1999, <http://library.northernlight.com/FC19991126650000011.html?cb=0&dx=1004&sc=0#doc>.
[110] For a good overview of the history of cable regulation, see James C. Goodale, "All About Cable" § 1.03 (1998).
[111] Frontier Broadcasting v. Collier, 16 Rad. Reg. 1005 (FCC 1958).

By 1965, however, concern over cable's impact on local broadcast television led the FCC to assert jurisdiction over cable systems, and impose "must carry" rules requiring cable systems to carry certain local TV stations.[112] In 1972, the FCC issued its first set of comprehensive regulatory rules for the cable industry. By the late 1970's, however, the FCC had begun to deregulate the industry. In a continuation of that deregulatory effort, Congress in 1984 enacted the Cable Communications Policy Act; as part of that Act, Congress delineated and restricted the FCC's regulatory authority, distributed limited regulatory power among local, state, and federal governments, and generally removed most rate regulation from the cable industry.[113]

By the late 1980's, however, concerns had emerged that (a) the cable industry was operating as a largely unregulated monopoly, (b) prices were too high, and (c) there was too much vertical integration consolidating video program production and distribution.[114] In response, Congress enacted the Cable Television Consumer Protection and Competition Act of 1992 (the "1992 Cable Act").[115] The Act imposed strong regulations on the cable industry, including rate regulation, "must carry" requirements, limitations on ownership of competing technologies by cable operators, and specific provisions designed to guard against discrimination by cable operators in favor of affiliated content providers.[116]

Certain of the findings, policies, and public interest objectives that motivated Congress to act with regard to video programming are echoed in the arguments and concerns expressed today by proponents of third party ISP access to cable systems. Among the findings made by Congress in 1992 are:

> (2) For a variety of reasons, including local franchising requirements and the extraordinary expense of constructing more than one cable television system to serve a particular geographic area, most cable television subscribers have no opportunity to select between competing cable systems. Without the presence of another multichannel video programming distributor, a cable system faces no local competition. The result is undue market power for the cable operator as compared to that of consumers and video programmers.
>
> (3) . . . . As a result of [its] growth, the cable television industry has become a dominant nationwide video medium.
>
> (4) The cable industry has become highly concentrated. The potential effects of such concentration are barriers to entry for new programmers and a reduction in the number of media voices available to consumers.

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[112] *See* Notice of Inquiry and Notice of Proposed Rulemaking, 1 F.C.C.2d 453 (1965).
[113] Cable Communications Policy Act of 1984, Pub. L. No. 98-549, 98 Stat. 2779 (codified in scattered sections of 47 U.S.C.).
[114] *See* Goodale § 1.15.
[115] Pub. L. No. 102-385, 106 Stat. 1460 (1992) (codified in scattered sections of 47 U.S.C.).
[116] For a good overview of the provisions of the 1992 Cable Act, see Goodale § 1.15[3].

> (5) The cable industry has become vertically integrated; cable operators and cable programmers often have common ownership. As a result, cable operators have the incentive and ability to favor their affiliated programmers. This could make it more difficult for non-cable-affiliated programmers to secure carriage on cable systems. Vertically integrated program suppliers also have the incentive and ability to favor their affiliated cable operators over nonaffiliated cable operators and programming distributors using other technologies.
>
> (6) There is a substantial governmental and First Amendment interest in promoting a diversity of views provided through multiple technology.[117]

Following its articulation of the above findings, Congress declared that it is the "policy of the Congress" to:

> (1) promote the availability to the public of a diversity of views and information through cable television and other video distribution media;
>
> (2) rely on the marketplace, to the maximum extent feasible, to achieve that availability;
>
> (3) ensure that cable operators continue to expand, where economically justified, their capacity and the programs offered over their cable systems;
>
> (4) where cable television systems are not subject to effective competition, ensure that consumer interests are protected in receipt of cable service; and
>
> (5) ensure that cable television operators do not have undue market power vis-a-vis video programmers and consumers.[118]

In directing the FCC to implement cable cross-ownership limitations, Congress required that the FCC pursue the following "public interest objectives":

> (A) ensure that no cable operator or group of cable operators can unfairly impede, either because of the size of any individual operator or because of joint actions by a group of operators of sufficient size, the flow of video programming from the video programmer to the consumer;

[117] Pub. L. No. 102-385 § 2(a).
[118] *Id.* § 2(b).

(B) ensure that cable operators affiliated with video programmers do not favor such programmers in determining carriage on their cable systems or do not unreasonably restrict the flow of the video programming of such programmers to other video distributors;

(C) take particular account of the market structure, ownership patterns, and other relationships of the cable television industry, including the nature and market power of the local franchise, the joint ownership of cable systems and video programmers, and the various types of non-equity controlling interests;

(D) account for any efficiencies and other benefits that might be gained through increased ownership or control;

(E) make such rules and regulations reflect the dynamic nature of the communications marketplace;

(F) not impose limitations which would bar cable operators from serving previously unserved rural areas; and

(G) not impose limitations that would impair the development of diverse and high quality video programming.[119]

In the Act, Congress prohibited exclusive contracts between cable operators and affiliated program vendors, unless the FCC concluded that such exclusive contract was in the public interest, with the FCC being required by the Act to consider the following public interest factors:

(A) the effect of such exclusive contract on the development of competition in local and national multichannel video programming distribution markets;

(B) the effect of such exclusive contract on competition from multichannel video programming distribution technologies other than cable;

(C) the effect of such exclusive contract on the attraction of capital investment in the production and distribution of new satellite cable programming;

(D) the effect of such exclusive contract on diversity of programming in the multichannel video programming distribution market; and

(E) the duration of the exclusive contract.[120]

[119] *Id.* § 11(c) (codified at 47 U.S.C. § 613(f)(2), but later amended).

Four years after passage of the 1992 Cable Act – which re-imposed significant regulation on the cable industry – Congress again changed course and removed much of the new regulation imposed in the 1992 Act. In the Telecommunications Act of 1996,[121] Congress removed most rate regulation and eased prohibitions on ownership by cable operators of competing video distribution technologies.

The issues and policies articulated by Congress in the 1992 Cable Act make clear that many of the concerns and arguments made today by proponents of third party access are not new, but have been raised before in the context of the cable industry's relationship with video content providers. By the same token, some of the provisions of the 1992 Cable Act – if applied to Internet service – would go a significant distance toward addressing the concerns of the third party access proponents. Thus, in this regard, imposing a third party access requirement on the cable industry would not be a wholly unprecedented development.

On the other hand, even this brief history of cable industry regulation shows that regulation has hardly been consistent or well settled. The cable industry has not operated under any sort of strict regulatory regime for extended periods of time. Moreover, the cable industry has never been subject to the type of common carrier regulation that has been applied for years to telephone companies. The cable industry does not have significant experience with detailed cost-based regulation and tariff requirements similar to the requirements have been placed on incumbent local exchange carriers. In light of the extensive litigation that has marked the regulatory efforts to force "open access" on telephone local exchange carriers, cable companies are understandably concerned about the prospect of any regulatory scheme forcing third party access on cable systems.[122]

E. Technological Issues

A variety of technological claims and concerns have been advanced over the course of the debate about third party access. Most fundamentally, many initially questioned whether third party access was even possible on a cable system. That question has been answered, but there remain significant technological concerns and issues that are relevant to the third party access question.

1. Basic Technical Feasibility

Simply stated, an upgraded cable system can support more than one ISP. Although there is no clear answer as to the best or most effective method to implement such support, there is no longer significant question that multiple ISPs can be supported. In Canada, third party access has

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[120] *Id.* § 19 (codified at 47 U.S.C. § 628(c)(4), but later amended).
[121] Pub. L. No. 104-104, 110 Stat. 56 (1996).
[122] Based on interviews with representatives of the Canadian cable industry, it appears that the prospect of extensive cost-based regulatory proceedings in Canada has caused significant concern in the industry.

been implemented in Timmons, Ontario, Sudbury, Ontario, and a limited number of other locations. The Canadian Cable Television Association, which represents all of the major cable companies in Canada, does not dispute that such access is possible, and in fact the CCTA is involved in government-mandated trials of third party access. Similarly, Knology cable systems in the United States has implemented third party access in a limited number of systems. In Clearwater, Florida, GTE has demonstrated third party access purely on a test basis. Most significantly, AT&T has announced its first technical trial of third party access on one of its cable systems.[123] As made clear by the recent movement by leading U.S. cable companies to accept some form of voluntary open access, no one is strongly asserting that it is not possible.

It is not clear, however, how to best implement third party access. In simple terms, third party access will be implemented by the installation of a "router" or similar piece of equipment at one or more points within a cable system. A router is a commonly used piece of network electronics that would scan the TCP/IP packets and route them to the appropriate ISP. Where the routers are placed, and how the router determines the appropriate destination, are questions to which there are not currently clear answers.[124]

On the question of router placement, a router could be placed immediately "behind" the "cable modem termination system" ("CMTS") that is installed in the cable headend. This approach might favor very small ISPs, which would be able to connect to routers that are (a) located close by, and (b) are very geographically focused. An arguably more efficient approach would be to place the router at a central point of aggregation where data from more than one CMTS, or possibly even more than one cable system, can be collected and then routed. The latter approach would require fewer routers, and would allow ISPs to connect to a much larger number of potential customers at a single point. For small, local ISPs, however, the latter approach could be very expensive, since the routers to which a small ISP would need to connect could be located a long distance away.

There are also a variety of ways the router could determine the appropriate destination. One method under consideration in Canada is "source routing," where the router looks at the source of each packet (i.e., which user has sent the packet) to determine which ISP should receive the packet. This approach, however, would require routers to look at more of the packet than routers normally are designed to do. Other approaches are also possible.

Aggravating the engineering issues is the fact that the equipment manufacturers have not historically been asked to design equipment that supports third party access in cable systems. Because there has not been a defined market in the United States for such devices, manufacturers have continued to produce only equipment that meets cable systems' current needs–and that equipment generally does not support third party access. Although third party access has been ordered in Canada, Canadian cable companies have not to date constituted a significant enough

[123] *See* "AT&T Sets First Cable Technical Trial of Multiple ISPs," Washington Internet Daily, June 8, 2000, at 4.
[124] These and other questions are currently under active discussion between the cable operators and the ISPs in Canada.

market for equipment manufacturers to dedicate their development efforts. As U.S. cable companies turn their attention to supporting third party access, leading equipment makers will likely focus on the requirements of such access.

To be clear, there are very significant engineering challenges raised by the provision of *any* Internet service over a cable plant. As discussed in the following section, there is a serious need for careful management of the available bandwidth on a cable system, and limitations on how any ISP or any individual uses the bandwidth may be appropriate. Many of these concerns, however, are present with or without third party access.

2. *Technological Concerns Inherent in the "Shared" Resource of a Cable Network*

There are significant technological concerns and potential problems that are inherent in the provision of Internet access over a cable system. As noted, an upgraded cable system supporting Internet access is a "shared" system, in which the users all share a finite amount of bandwidth. All of the users supported by a single cable modem termination system ("CMTS") share the same bandwidth. A single CMTS may be used to support hundreds (or more) of simultaneous Internet users.

For example, if the CMTS has been configured to support 1 Mbps of *upstream* data, then all of the users on that CMTS share that 1 Mbps. When only a single user is actively using the Internet connection, then that one user has full use of 1 Mbps of upstream bandwidth. When a second user accesses the Internet, and both users are transmitting very large files, both users will effectively be able to use 500 kbps of bandwidth. In reality, it is unlikely that the two users would both be fully loading the upstream bandwidth at the same instant, so that both users could perceive that they had nearly 1 Mbps of bandwidth available. If, however, there are 400 people sharing the bandwidth, then none of the users is likely to have a full 1 Mbps of upstream bandwidth available. Because not all 400 users will be transmitting data upstream at the same time, and because in most surfing of the World Wide Web the upstream data flow is quite limited, it is quite possible that all 400 users will be generally satisfied with the upstream data flow.

A significant potential exists that a small number of users (or even one user) could "hog" a large portion of the available bandwidth, to the detriment of all other users. In the above hypothetical, assume that a user were to "host" a World Wide Web site using the cable modem service (such that the user's computer would have to respond to web requests by transmitting data upstream on the cable system). If the hypothetical Web site were to become popular and have large graphic images, all other users sharing the same CMTS would likely experience very significant slowdowns in upstream data flow.[125]

[125] The possibility of a small number of users using massive amounts of bandwidth is not theoretical. The music exchange program "Napster" is an example. Just as some colleges have banned the used of Napster on their networks, at least one cable system has also banned Napster because of the high amount of upstream bandwidth used

The potential for slowdowns caused by one or more bandwidth "hogs" is equally plausible with *downstream* bandwidth. A CMTS may support, hypothetically, 30 Mbps of downstream data in aggregate. If 400 users share that bandwidth and a handful of them are constantly downloading huge data files, the other users will likely experience significant drops in performance. Even without any bandwidth "hogs," the 400 hypothetical users will likely experience slowdowns during peak usage periods, but bandwidth "hogs" could bring the downstream data flow nearly to a stop.

Theoretically, a cable operator could increase the amount of bandwidth available for Internet access in one of two ways. First, the operator could install more CMTSs, thereby reducing the number of customers sharing a single CMTS, and thus increasing the bandwidth per customer. Second, a cable operator could on a system wide basis dedicate additional bandwidth to Internet access, reducing the number of ordinary cable channels offered. Although both solutions may be desirable to those who believe that more bandwidth is always better, both approaches – if ordered by a government body – would be a significant regulatory incursion into the operations of the cable system.

There are two more practical approaches to the problem of bandwidth "hogs." First, a cable operator may impose rules about the types of operations that the cable system will support. Thus, for example, it is common for cable operators to prohibit the operation of a World Wide Web server over the cable modem system.[126] Alternatively, cable operators in Canada and elsewhere have taken the approach of pricing their cable service according to the amount of bandwidth utilized. Thus, the hypothetical bandwidth "hog" would be permitted to continue use the higher amount of bandwidth, but would be required to pay for the additional bandwidth (and this increased payment could be used to finance capital expenditures to increase bandwidth).

Given the shared nature of the cable system, bandwidth usage guidelines will be necessary for cable modem service from *any* ISP, whether or not third party access is imposed. The need to impose some constraints on bandwidth usage (whether by rule or by higher fees for more bandwidth usage) is independent of the third party access question.

If third party access were implemented on a cable system, the need to control bandwidth might narrow the business models of ISPs seeking to provide service over the cable system. Unless a bandwidth-sensitive pricing scheme were to be implemented, it is unlikely that ISPs would be able to offer to support web servers over the cable system, or other similar bandwidth-intensive applications. As implemented by most cable systems, cable modem service simply may

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by the program. *See* "Napster Not At Home With Cable," Wired News, Apr. 7, 2000, <http://www.wired.com/news/print/0,1294,35523,00.html>.

[126] The cable operator or cable modem ISP may well offer customers space on a web server that is *not* directly connected to the shared resource of the cable facility. Such approach would allow the customers to create a web site while reducing the customers' need to host the web site themselves.

not support the full range of Internet Protocol ("IP") based applications, and thus cable service may be a more narrow and less flexible offering than DSL service or other high-bandwidth options.

3. *Streaming Video and the "10 Minute Limit"*

There was in the third party access debate much discussion of a ten-minute limit that cable companies imposed on "streaming video" delivered over the Internet. The @Home company's agreements with cable operators to provide Internet service over the cable systems include a provision that prohibits Internet users from accessing more than ten minutes of "streaming video," which is a primary method of delivering full motion video over the Internet. Although the @Home company has stated that this limitation was an outgrowth of the bandwidth concerns discussed above, critics of @Home and the cable operators have asserted that the cable companies imposed the limit on streaming video because "they believe that Internet-quality streaming video competes with traditional cable television service."[127]

The ten-minute limit on streaming video was a plausible and not unreasonable response to a concern about bandwidth. But it is also certainly plausible that there was some desire to limit competition in the delivery of video. Indeed, a senior executive from @Home was recently quoted as saying that "[c]able operators imposed [the ten minute limit] to ensure Excite At Home didn't compete with cable."[128]

In any event, this issue appears to have resolved itself. The @Home company has stated that the ten minute limit was never enforced, and the specific limit appears to have been omitted from @Home's current Acceptable Use Policy.[129] The merged AOL Time Warner has indicated that it would not impose a "ten minute limit."[130] Moreover, in the long run, there would likely be market forces that would discourage enforcement of this type of restriction.

The ten-minute limit does illustrate, however, the risk that control by a single company over broadband access could theoretically have a direct and negative affect on innovation and the free exchange of information over the Internet. If such a limitation is technologically required given the shared nature of the cable resource (as discussed in the preceding section), then a limitation would likely be appropriate.

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[127] <http://www.nogatekeepers.org/learnmore/faq.shtml>.

[128] "Excite to offer high-speed Net services," USA Today, Apr. 12, 2000, p.6B, <http://www.usatoday.com/life/cyber/tech/review/crh051.htm>. The reference to the 10 minute limit on cable systems was made in the context of discussing Excite@Home's contract with Rhythms NetConnection to offer the @Home service over DSL lines. The 10-minute limit will not be applied to Excite@Home's DSL service. *Id.*

[129] <http://www.home.com/support/aup/>.

[130] Memorandum of Understanding Between Time Warner, Inc. and America Online, Inc. Regarding Open Access Business Practices, Feb. 29, 2000, para. 6, <http://media.web.aol.com/media/press_view.cfm?release_num=25100400&title=Memorandum%20of%20Understanding%20Between%20Time%20Warner%2C%20Inc%2E%20and%20America%20Online%2C%20Inc%2E>

F. Competition from Other Broadband Technologies

A key issue in considering whether government-imposed third party access is appropriate is whether consumers will be able to receive broadband access to the Internet from sources other than cable companies.

Today, DSL services from incumbent and competitive local telephone companies directly compete with cable modem services. Although significant differences between the two services exist –cable modem service promises higher speeds while DSL service offers more consistent speed – they are similar enough to be effective substitutes for today's Internet applications commonly used by residential users.[131]

In a handful of markets today, wireless technologies provide broadband access, but wireless providers have not to date widely marketed their services to residential areas. Companies such as Winstar, Teligent, and Nextlink target businesses, while Sprint, WorldCom, and other companies with wireless services have only a very few residential customers. Thus, today, broadband access for individuals is largely limited to cable modem and DSL service.

Estimates of how widely cable and DSL will be deployed vary greatly. It is likely that by 2003-2004, at least 75% of U.S. households will be able to get cable modem service, and perhaps as much as 66% of households will be able to receive some form of DSL service. Over the same period, wireless services should become more available (including for residential service), but it is unclear how wide that deployment will be for residential service. Similarly, broadband satellite services are predicted to begin to be offered by 2002 or 2003, but again, it is not clear whether such services will be price competitive in the residential market.[132]

A key question is how much choice, if any, individual users will have between different broadband access technologies. One analyst who follows the broadband market closely has concluded that "[i]n the next three to four years, . . . up to 20% of the country may have a choice of three to four different broadband facilities, roughly 30% of the country may have the choice of two, and half of the country may have only one or no broadband facility to choose from."[133] This type of estimate is very difficult to confirm based on currently available information, and these numbers reflect significant (but not unreasonable) skepticism about the business viability of residential broadband service delivered by wireless or satellite means. Nevertheless, it does appear likely that a large percentage of potential residential consumers in the United States will

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[131] It is certainly possible that one broadband technology will prove to be better suited for certain applications, but for general "surfing" of the World Wide Web, both cable modem and DSL service offer dramatically faster access speeds than are available over a dial-up connection.

[132] As discussed above, the expected "service availability date" of the Teledesic system has slipped from 1999 until 2004.

[133] "The Developing Residential Broadband Gap," The Precursor Group, Legg Mason Wood Walker, Inc., February 8, 2000. Scott Cleland and the Precursor Group are viewed by some as slanted against the cable industry in the third party access debate (and certainly, many of the Group's analyses have been critical of cable's refusal to open their pipes to multiple ISPs). Cleland's data, nevertheless, represents a reasonable and realistic assessment of the likely deployment of broadband access services.

have *at most* a choice of two broadband pipes, and many consumers will have one or zero choices.

To put these numbers in further perspective, it is highly likely that in 2003 a majority of citizens will still get access to the Internet either (a) at their place of employment, or (b) using traditional, dial-up, narrowband Internet access methods. Although broadband access will surge in importance, narrowband access will remain a significant force for years to come.

G. Claimed Risks of *Not* Mandating Third Party Access

Proponents of government-imposed third party access have raised a variety of concerns, the most significant of which are discussed below.

1. Censorship of Speech or Access to Content

Advocates of third party access have argued that in the absence of an access requirement, cable operators would be able to restrict consumers' access to Internet content or otherwise censor speech. This is a valid concern, although the risk of censorship may not be eliminated by imposition of a third party access requirement. Short of imposing common carrier obligations on cable companies, it is at least theoretically possible that a cable company could limit the type of content carried on its system. In theory, the cable companies have a First Amendment right not to carry particular content if they do not choose do to so, and this right would apply whether a cable affiliated ISP imposed the limit or a cable operator imposed the limit on affiliated and third party ISPs alike. A government action to prohibit a content-based limitation imposed by a cable owner would raise difficult constitutional questions – questions that cannot easily be answered in the abstract.

Thus, there is a risk of cable operator-imposed censorship regardless of the third party access issue. The practical risk of such censorship, however, would be significantly reduced if third party access were required. It would not likely be in the business interest of the cable operator to impose a content based limit on ISPs offering service over the cable network. If more than one ISP offers service over the cable system, there is a lower likelihood that all of the ISPs would themselves choose to impose a content-based restriction.

In the absence of third party access, there is also a greater risk that a government would legislate content-based restriction to advance social agendas unrelated to third party access. If, at some time in the future, only a handful of companies controlled the vast majority of Internet access services to the home, the government might conclude that regulating content could be accomplished by regulating the small number of companies controlling broadband access to the home. The chance of governmental regulation would likely diminish if hundreds or thousands of ISPs continue to offer a wide range of access choices.

2. *Discrimination in Speed of Content Delivery*

Another significant concern advanced by proponents of third party access is that, would a cable operator would be able to discriminate in how fast content is delivered to consumers. Not only would discrimination among content providers be possible, such discrimination is *already* a part of many business models, if not most business models, of broadband access providers. For example, one of the strong market selling points of the leading cable broadband access provider, @Home, is that @Home has developed a sophisticated system of "Super Nodes" that are specifically designed to be able to deliver selected broadband content to @Home's subscribers.

Thus, hypothetically, if @Home were to contract with a specific automobile manufacturer, that manufacturer's broadband sales videos would be delivered more quickly and reliably than those of a competing content provider. As an equally plausible hypothetical, if America Online were to develop and offer specific broadband content to its customers, @Home cable modem subscribers would likely not be able to access AOL's broadband content as quickly as the broadband content that @Home maintains on its local servers.

In this latter hypothetical, the discrimination between broadband content would not necessarily disappear in a third party access situation. If third party access were ordered and AOL were able to offer service directly to cable modem subscribers, it is very likely that AOL's network would continue to favor its own broadband content, and non-AOL broadband content would likely be delivered to AOL subscribers more slowly than AOL-hosted content. Likewise, subscribers who choose @Home instead of AOL would likely not be able to access AOL broadband content as quickly as @Home content. In other words, there may be an element of discrimination among broadband content inherent in how broadband networks are being constructed on the Internet. This inherent discrimination is part of a larger concern about the development of broadband networks, and is discussed more fully in a separate paper issued by the Center for Democracy & Technology and its the Broadband Access Project, entitled "The Broadband Internet: The End of the Equal Voice?"[134]

Thus, for policy makers confronted with the third party access debate, the issue may not be whether certain broadband content will be favored over other, but whether cable modem subscribers will be able to choose among broadband providers (and thus be able to choose which set of broadband content will be the favored content to which they will have quick access).

3. *Higher than Competitive Prices*

Another concern is that in the absence of a third party access requirement, a cable operator might be able to charge higher than competitive prices. Although there is some validity

[134] Jerry Berman and John B. Morris, Jr., "The Broadband Internet: The End of the Equal Voice?," April 2000, <http://www.cfp2000.org/papers/morrisberman.pdf>.

to this concern, the current and likely competition between cable and DSL service in parts of the country may minimize this risk.

Certainly, in the absence of third party access, a cable operator would not face direct price pressure over the cable network, and might be able to maintain higher than fully efficient prices.[135] The narrowband Internet saw the emergence of vigorous price competition from the thousands of ISPs that compete for dial-up customers. That direct price competition would be lacking in the absence of third party access.

On the other hand, competition from DSL technology will exert some pressure on prices. In Canada, DSL and cable providers have viewed themselves as in direct competition with each other, and it appears that there has been price pressure across technologies. (Indeed, in Canada, both DSL and cable modem service are priced significantly lower than comparable service in the United States,[136] although it is difficult to determine if the lower prices are attributable to a greater level of competition.) Similarly, in the United States, it appears that "DirecTV" type of satellite dishes are providing competition to cable. Thus, it is likely that there would be some degree of price pressure even in the absence of third party access.

4. The "Pay Twice" Theory

Proponents of third party access assert that without a third party access requirement, a consumer who has a preferred ISP would have to "pay twice - once for the gatekeeper's ISP, and once for the ISP they want."[137] As a concrete example, a cable modem subscriber might have to pay both @Home (for the broadband connection) and AOL (for access to AOL's proprietary content). This argument, however, may create some confusion about what the third party access proponents really are seeking. Ultimately, the argument both overstates and understates significant concerns.

As a threshold matter, many people would have very little interest in retaining an old ISP, and thus would not even consider "paying twice" to keep a prior ISP. For individuals who currently obtain simple Internet access from an ISP that does not itself provide proprietary content, the primary effect of being forced to switch ISPs would be to require that the user obtain a new e-mail address. The main concern of millions of Internet users is simply the ability to access the Internet rather than who provides that access. For these users, the "pays twice" argument does not really apply.

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[135] As discussed above, one of the concerns that led to the 1992 Cable Act was the perception that the cable industry was charging too much for video services as a result of a lack of competition.

[136] For example, @Home service in the United States is typically priced at $39.95-44.95, <http://www.home.com/pricing.html>, while the same service in Canada is priced at $39.95 Canadian dollars, <http://rogers.home.com/Value.html>, or about $27.00 in U.S. dollars.

[137] <http://www.nogatekeepers.org/learnmore/faq.shtml>.

Being forced to change e-mail addresses is not, of course, a trivial problem. Changing an e-mail address can be as disruptive as changing a telephone number or mailing address. But, even if third party access were ordered, many consumers would still have to change their e-mail addresses simply because some ISPs will not convert their systems to support broadband speeds.[138] In other words, the e-mail address problem will occur to a greater or lesser extent with or without third party access. Moreover, the changed in e-mail address is a one-time problem that, once addressed, will not cause continuing issues.

The major group of Internet users– more than 20 million users of them –adversely affected by a forced ISP change would be subscribers to America Online. AOL subscribers are the primary group who might in fact decide to "pay twice," to be able to continue to get access to AOL addressed e-mail, and to get access to proprietary content offered by AOL. Very few ISPs other than AOL provide a significant amount of content that is not generally available to the Internet, and thus few non-AOL users would be unable to get direct access to content that previously had been available to the users. Moreover, information provided by AOL indicates that the vast majority of its users spend most of their time within AOL's proprietary service, and do not primarily use AOL as a way to access the Internet. Thus, consumers who use the services of one company – AOL – may be more severely harmed than users of other ISPs by a failure to require third party access.

AOL does offer a content-only subscription (for users who want access to AOL content and e-mail, but who already have their own connection to the Internet, such as a cable modem service). Thus, those users would be able to get access to AOL, but they would have to "pay twice." That access, however, would *not* be the same quality access than if AOL were able to offer access services directly over the cable. Any content-only access to AOL that cable modem users received would by necessity run through the facilities and backbone connection of the cable-affiliated ISP. Thus, AOL would have very little ability to optimize its content to take advantage of the high-speed connection. Were AOL to offer access service directly over the cable, it would be able to ensure that broadband content was provided to the consumer from a close, local, and fast content server. Indeed, this is precisely one of the advantages that the @Home company offers today – a network of local content servers that can provide fast content to users.

AOL users that want to continue using AOL's services in the absence of third party access would have to "pay twice" to get to AOL, and even then would not be able to get the same quality broadband connection that AOL would likely offer directly. For non-AOL users, the primary downside of having to change ISPs is the change in e-mail addresses, which is a significant but not insurmountable burden.

[138] An ISP that, hypothetically, has supported 10,000 dial-up users at 56 kbps speeds cannot simply shift 2,000 of those users over to a broadband connection operating at 1.5 Mbps. The hypothetical ISP would almost certainly have to increase significantly the speed of its connection back to the Internet backbone in order to support the speed demands of the new broadband customers. Not all ISPs will choose to make that investment.

H. Claimed Risks of Mandating Third Party Access

Opponents of imposed third party access have raised a variety of concerns, the most significant of which are discussed below.

1. Incentives for Cable Plant Upgrades

Some concern has been expressed that cable companies would not upgrade their cable systems in the face of a third party access requirement.

The U.S. cable industry started down the road toward upgraded HFC cable plants in the early 1990's, for reasons wholly unrelated to the Internet. A CableLabs overview of the development of cable television – prepared in 1995, before the Internet really exploded – explained that a primary driver for the cable industry's adoption of HFC architecture was digital video.[139] According to that report, the emergence of digital video compression – which allows cable operators to deliver dramatically more video over the coax cable – "inspired the cable industry to dramatically upgrade its physical facilities."[140] A primary "goal" of an upgrade was to "[I]ncreas[e] the [cable] plant's channel capacity."[141] Beyond digital video, the cable industry continues to pursue interactive TV as a vehicle to deliver electronic mail, online shopping, and electronic channel guides and information.[142] These services also require an upgraded cable architecture.

By the early 1990's, the cable industry had confronted the reality of serious competition in the delivery of video services (from direct broadcast satellite, wireless, and cable overbuilders).[143] It looked to HFC plant architecture and other new technologies to be able to compete. Thus, there is a significant impetus for a cable operator to upgrade to a two-way HFC cable system unrelated to the possibility of providing Internet service.[144] In Canada, where the Canadian Radio-television and Telecommunications Commission indicated as early as 1996 that it would order third party access, cable systems nevertheless have nearly fully upgraded their cable plants. U.S. cable operators would likely upgrade their plant even if third party access were to be ordered.

On the other hand, there is no question that additional investment is required to make an HFC cable plant support Internet service. Each cable modem termination system (CMTS) can

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[139] Walter Ciciora, "Cable Television in the United States – An Overview," at 47 (CableLabs 1995) <http://cablelabs.com/about_cl/pubs/CATV.pdf>.
[140] *Id.*
[141] *Id.* at 29. Ironically, the CableLabs overview expressed specific doubt that Internet services would be a practical application to be offered by cable systems. *Id.* at 58, 62-63.
[142] *See, e.g.*, "Time Warner deal pushes interactive TV forward," CNET News.com, <http://news.cnet.com/news/0-1006-202-1454162.html> (viewed Nov. 22, 1999).
[143] *Id.* at 54.
[144] The two-way capability would be necessary for selecting movies on demand, and for other limited interactivity available over a cable system.

cost tens of thousands of dollars, and a large system could require dozens of CMTS boxes. A cable operator must then design and build a network to connect the CMTSs (and likely must finance the cable modems installed in users' homes). Thus, although most cable systems will likely upgrade their facilities to HFC architecture, the decision also to support Internet access service still requires significant investment.

2. *Incentives for Investment in Cable Systems*

Opponents of mandated third party access have asserted that outside investment in cable companies would dry up if third party access is ordered.

A governmental decision imposing third party access would have an impact on the value of cable enterprises, which in turn could reduce the amount of capital available to cable operators to invest in system upgrades. The stock market has followed, and reacted to, developments in the third party access debate, and cable stocks have declined following victories for the third party access proponents.

On the other hand, if a third party access requirement were imposed *and* the requirement were structured in a way that provided a fair price to cable operators for services provided to third party ISPs, it is likely that investment dollars would continue to be available to fund cable upgrades. Internet access is not the only, or even primary, reason a cable operator would need to upgrade its system, and so long as the operator is able to obtain a fair return on the Internet-specific portion of the upgrade, the upgrade should still make business- and investment-sense. The likelihood that investments would not stop in the face of a third party access requirement is supported by the fact that Microsoft recently invested over $400 million in Canada's Rogers Communications, Inc., notwithstanding the fact that Rogers' cable systems are operating under a still-developing third party access regime.[145]

Indeed, a clear resolution of the third party access debate could even increase investment in cable facilities. Opponents of third party access have correctly asserted that investment money avoids situations with regulatory uncertainty. The opponents have argued that Congressional or FCC consideration of third party access proposals would create uncertainty and chill investment. It is possible, however, that the prolonged third party access debate itself has created market uncertainty that a resolution of that debate (even one that results in a third party access requirement) could reduce.

Finally, the fact that four leading U.S. cable companies have voluntarily committed to some form of third party access, and those companies have not experienced massive drops in stock price or investment, suggest that the U.S. financial markets are not skittish about third

[145] "Rogers Communications and Microsoft Announce Agreements To Develop and Deploy Advanced Broadband Television Services in Canada," Press Release, <http://www.microsoft.com/presspass/press/1999/jul99/rogerscommpr.htm>.

party access per se. If third party access were imposed by Congress or the FCC, the cable companies would incur significant additional expenses, but it is not clear that financial markets would react differently than they have already reacted to voluntary third party access.

3. *The Potential for a Regulatory Morass*

Opponents of mandatory third party access have expressed the very significant concern that any such requirement would lead to complex regulation and litigation.

Although simpler and more focused, a third party access requirement would not be different in kind than the local telephone competition provisions of the Telecommunications Act of 1996. Those provisions, which required that incumbent local exchange carriers open their networks and allow third parties to provide telephone services, have led to truly massive litigation and regulatory disputes. The prospect of replicating that degree of litigation in the cable arena has almost certainly been a major factor underlying the FCC's "hands off" approach to third party access.

A third party access requirement would raise a host of very difficult issues, including (a) how much a third party ISP would pay to a cable company, (b) how and where the ISP would interconnect into the cable system, (c) what limitations, if any, would be placed on the ISP's use of the bandwidth, and (d) whether the cable company continued to favor an affiliated ISP even after third party access was ordered. These are all directly analogous to difficult questions raised about competition in local telephone markets.

The challenge posed by a third party access requirement may even be greater in the cable arena than in the telephone arena, for two reasons. First, because the bandwidth over the cable system is a shared resource, an individual ISP or user could (either accidentally or intentionally) interfere with the services provided by a competing ISP. The shared nature of cable increases the need for genuinely cooperative and concerted efforts between a cable company and an ISP.

Second, some data and bandwidth management functions can only be performed by a single responsible entity. To date, cable companies have contracted out those functions to their affiliated ISPs (@Home, Roadrunner, ISP Channel, etc.), and have not maintained network engineering staffs capable of implementing and maintaining the cable modem termination system and supporting network equipment. In a third party access situation, it is likely that the affiliated ISP would continue to perform those functions on behalf of the cable operators. If that were to happen, then the affiliated ISP would have significant ability to interfere with the services and capabilities available to third party ISPs.

In an effort to avoid these potential disputes, America Online and other ISPs have expressed their willingness to agree to the same contractual terms as exist between cable operators and their affiliated ISPs (@Home or Roadrunner, etc.). This assertion, however, ignores

the reality that under those terms, affiliated ISPs perform management functions that cannot practically be split among more than one company. Although contracts between cable operators and their affiliated ISPs are confidential and closely held, it is possible that some affiliated ISPs perform bandwidth management functions in partial exchange for the ability to market cable modem services to the subscriber (and thus, a separate dollar value of the management services has not been established). Moreover, in the case of AT&T and @Home, the contract between those two companies may require @Home to utilize AT&T's backbone network for at least some of @Home's Internet traffic. Thus, even if third party ISPs were allowed on a cable network, it would not likely be on the same precise terms as @Home. Therefore, if the third party access requirements mandated non-discrimination between ISPs, there would be a need to evaluate the financial significance of the bandwidth management portion of contracts between cable operators and affiliated ISPs.

In the face of these challenges, it is clear that the most desirable way to achieve a goal of third party access to cable systems would be for cable operators and ISPs to negotiate workable contractual arrangements. If cable operators and ISPs were both undertake a common objective of implementing third party access, and such access could be financially beneficial for all involved, then pricing and interconnection issues could certainly be resolved. Unfortunately, the experience in Canada does not bode well for a global negotiated solution to the third party access issue in the United States. In Canada, where the Canadian Radio-television and Telecommunications Commission (CRTC) has already mandated third party access, the cable and ISP industry association engaged in confidential negotiations in an effort to reach agreement on critical terms of third party access. These negotiations failed to bear fruit. It appears that a key unresolved issue was price—how much an ISP would pay a cable operator for access to the cable system.[146]

All of this does not by itself lead to the conclusion that third party access should not be ordered. Depending on the concerns discussed elsewhere, if it should be determined that a third party access requirement is desirable, then creative lawmakers and regulators could likely craft a workable process that minimized the disputes that have been seen in the local telephone competition proceedings. As noted, the third party access issue is simpler and narrower than all of the issues and disputes concerning local telephone competition. Although legal or regulatory disputes concerning third party access would not be wholly avoided, they could be focused fairly narrowly.

If a statutory or regulatory third party access scheme be crafted, it must include the following key points:

- a requirement that cable operators permit third party ISPs to interconnect into the cable system at one or more efficient connection points;

[146] Ironically, the fact that retail prices for cable modem service in the United States are generally higher than those in Canada may ultimately permit industry players in the U.S. to reach agreement where their counterparts in Canada could not. A higher retail price may give the parties more negotiating room in which to find a mutually beneficial price.

- a provision allowing cable operators to set minimum financial standards to ensure that only viable and responsible ISPs can interconnect;
- a requirement that a cable modem subscriber be able to obtain service from any of the participating ISPs without also paying for service from an affiliated ISP;
- a provision permitting cable operators to contract with a single ISP to provide network and bandwidth management functions;
- a requirement that the cable operators and network managers not discriminate among ISPs in terms of physical and technical capabilities, and operational support systems (e.g., order taking systems and troubleshooting capability);
- a provision allowing cable operators to set (on a nondiscriminatory basis) technically required limitations on data rates and volumes for the services offered by ISPs (in light of the shared nature of the cable network); and
- a provision addressing the price ISPs would pay for access to the cable systems.

Except for the last provision, each of these elements could be hammered out in a regulatory drafting process. For the last provision, a policymaker would need to choose between asking the regulatory agency to articulate a pricing scheme, or creating a requirement that the market negotiate a price. Whatever approach to pricing were adopted, it is quite possible that legal or regulatory challenges would ensue. Those challenges, however, need not be as complex or involved as those seen in local telephone competition.

4. Delay in Deployment

Opponents of mandatory third party access have expressed concern that an access requirement would delay broadband deployment. It is not clear that this delay would in fact happen, if the cable industry acts to take advantage of a possible significant head start in the broadband market.

In opposing third party access, the cable industry has asserted that a third party access requirement would significantly delay broadband deployment, in part because investment would be deterred (as discussed above), and in part because of the industry threat not to deploy broadband if third party access were ordered.

If a third party access requirement were seriously proposed or adopted, the cable industry would have two basic choices. It could (a) delay deployment while it fights the requirement, or it could (b) aggressively deploy the services while it fights the requirement. If the cable industry delays deployment and wins, then cable will have run the risk of allowing DSL service to catch up and perhaps overtake cable modem service. If the cable industry delays deployment and loses, then it will have allowed DSL to catch up *and* it will immediately face full third party competition. On the other hand, if the cable industry aggressively deploys *during* a fight over third party access, it becomes almost a win-win situation for the cable company. Either the cable industry defeats third party access (in which case it has neither delayed deployment nor

lost ground against DSL), or the industry fails to defeat third party access (in which case the industry has an enormous head start over would be cable modem competitors).

The cable industry's ability to achieve a very significant head start should not be understated. In Canada (where broadband deployment is more widespread), the cable industry aggressively deployed cable modem service while continuing to participate in the regulatory process that is moving to third party access. Most Canadian cable companies will be offering cable modem services to most of their customers long before third party access is actually implemented (sometime in 2000). The Canadian ISP industry has acknowledged the cable industry's very significant head start. If the United States cable industry acts rationally, it will deploy even in the face of a possible third party access requirement.

5. *The Constitutional Rights of Cable Owners?*

Opponents of mandatory third party access have asserted that such a requirement would violate the constitutional rights of cable owners.

Although the question is far from easy or certain, it does not appear likely that a court would find that third party access to cable systems violates the constitutional rights of cable operators. A court would likely find that a third party access requirement does burden the speech of cable operators and/or forces speech on them. Thus, the requirement would then be viewed with standard of heightened scrutiny. The requirement, however, is content-neutral, and thus the appropriate level of scrutiny would be intermediate (as opposed to strict) scrutiny. If third party access is undertaken by Congress or the FCC, a court would likely find that promotion of competition and diversity in the area of broadband access is an important governmental interest, and third party access promotes that interest without burdening any more speech than is essential. A court would thus likely conclude that third party access survives constitutional scrutiny.

This conclusion is consistent with the courts' upholding of video "must carry" and "leased access" provisions of the Telecommunications Act of 1996. In that Act, Congress required cable operators to carry certain local television stations channels (for "must carry") or independently produced video ("leased access"). In the *Turner Broadcasting System, Inc. v. FCC* series of cases, the Supreme Court and the U.S. Court of Appeals for the D.C. Circuit upheld those provisions using an analysis similar to that discussed above.[147] Third party access presents no greater constitutional issue than was presented in *Turner*,[148] and thus third party access would likely be upheld..

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[147] *See Turner Broadcasting System, Inc. v. FCC*, 512 U.S. 622 (1994) (Turner I); *Turner Broadcasting System, Inc. v. FCC*, 520 U.S. 180 (1997) (Turner II).

[148] In fact, in the Internet context it is generally quite clear that *the user* controls what content is delivered, and thus there is even less chance than in *Turner* that someone will assume that the Internet content reflects the opinions and views of the cable system operator.

V. CONCLUSION

Openness has been fundamental to the narrowband Internet's free-speech and democracy-enhancing character. As the Internet shifts from narrowband architecture to broadband technologies, it is critical that openness is maintained. This Broadband Backgrounder, a factual primer and analysis of the issues, finds that openness is feasible. Indeed, as the public debate has evolved, it is clear that there is no longer a question of whether open access is feasible or desirable. What remains to be decided, and the discussion this paper seeks to inform, is how openness is defined, and how it best can be achieved.

EXHIBIT 2

Checklist of Essential Elements for Effective Third-Party Access

This checklist uses the following terms

The term "facility owner" refers to the communications company that installed and/or owns the underlying physical equipment that provides a way to deliver broadband Internet service to individual users. This term would include, for example, a local telephone or cable company.

The term "Internet Service Provider" or "ISP" refers to the company that provides the connection between the underlying communications facility and the Internet. These terms would include, for example, America Online, Earthlink, and @Home. ISPs can be owned by or affiliated with a facility owner, or can be independent and unaffiliated.

The term "Internet user" refers to any user or consumer of retail Internet services, whether that user is an individual, a small business, or other entity.

#	QUESTION	EVALUATION	✓ * ✗
	Openness from the perspective of the individual Internet user		
1.	Can the Internet user access and receive any lawful content on the Internet, free from any limitation imposed by the broadband facility owner?	If "Yes" enter a ✓, otherwise enter an ✗.	
2.	Can the Internet user speak and post any lawful content to the Internet, free from any limitation imposed by the broadband facility owner?	If "Yes" enter a ✓, otherwise enter an ✗.	
3.	Can the Internet user utilize any generally available content delivery technology (such as streaming audio or video applications) to access and receive content on the Internet, free from any limitation imposed by the broadband facility owner?	If "Yes" enter a ✓, otherwise leave blank and proceed to Questions 3a.	
3a.	If "No" to Question 3, are any restrictions on use (a) applied equally to all users and all ISPs using the broadband facility, (b) based on reasonable technical and engineering concerns, *and* (c) narrowly drawn to constrain only those uses that raise technical and engineering concerns?	If "Yes" enter a *, otherwise enter an ✗.	
4.	Can the Internet user use any generally available Internet technology (such as web servers) to deliver content to the Internet, free from any limitation imposed by the broadband facility owner?	If "Yes" enter a ✓, otherwise leave blank and proceed to Questions 4a.	
4a.	If "No" to Question 4, are any restrictions on use (a) applied equally to all users and all ISPs using the broadband facility, (b) based on reasonable technical and engineering concerns, *and* (c) narrowly drawn to constrain only those uses that raise technical and engineering concerns?	If "Yes" enter a *, otherwise enter an ✗.	
5.	Can the Internet user access the Internet without first accessing a "start page" or initial screen controlled or required by the broadband facility owner?	If "Yes" enter a ✓, otherwise enter an ✗.	
6.	Can the Internet user choose from a variety of service plans offered by a variety of ISPs, including both local and national ISPs?	If "Yes" enter a ✓, otherwise enter an ✗.	
7.	Can the Internet user obtain service from an ISP that is not affiliated with the facility owner without *also* having to purchase Internet service from an ISP that is affiliated?	If "Yes" enter a ✓, otherwise enter an ✗.	

#	QUESTION	EVALUATION	✓ * ✕
8.	Are research or development efforts under way to reduce or eliminate any restrictions identified in Questions 3 and 4 above?	If "Yes" enter a ✓, if no restrictions were identified leave blank, otherwise enter an ✕.	
	Openness from the perspective of the Internet Service Provider (ISP)		
9.	Does the facility owner permit unaffiliated ISPs to offer Internet service over the owner's broadband network?	If "Yes" enter a ✓, otherwise enter an ✕.	
10.	Does the facility owner limit the number of ISPs that can offer service over the broadband network?	If "No" enter a ✓, otherwise leave blank and proceed to Questions 10a and 10b.	
10a.	If "Yes" to Question 10, is the limit exclusively based on legitimate technical limitations on the number of ISPs supportable on the network?	If "Yes" enter a *, otherwise enter an ✕.	
10b.	If "Yes" to Question 10, are research and development efforts under way to reduce or eliminate the limits?	If "Yes" enter a *, otherwise enter an ✕.	
11.	Can an unaffiliated ISP contract with the facility owner for access to Internet users on essentially the same financial terms as are given to an affiliated ISP for similar access?	If "Yes" enter a ✓, otherwise enter an ✕.	
12.	In terms of speed of access, technical functionality, and ability to offer service to customers, does an ISP affiliated with the facility owner have any advantages over an unaffiliated ISP?	If "No" enter a ✓, otherwise enter an ✕.	
13.	In terms of operational support systems and the procedures and timetable used to offer service to new customers, does an ISP affiliated with the facility owner have any advantages over an unaffiliated ISP?	If "No" enter a ✓, otherwise enter an ✕.	
14.	Does the facility owner require ISPs to use any equipment or services of the facility owner (such as Internet transport services) beyond those essential to the Internet access service itself?	If "No" enter a ✓, otherwise enter an ✕.	
15.	Can an unaffiliated ISP establish a direct vendor-customer relationship with the ultimate Internet user?	If "Yes" enter a ✓, otherwise enter an ✕.	
16.	Can an unaffiliated ISP initiate the process of establishing service to an Internet user, such that the ISP can permit a new user to establish service via a single request to the ISP (avoiding any need for the user to also contact the facility owner)?	If "Yes" enter a ✓, otherwise enter an ✕.	

EXHIBIT 3

"The Broadband Internet: The End of the Equal Voice?"

by
Jerry Berman
and
John B. Morris, Jr.

http://www.cdt.org/publications/broadbandinternet.pdf

The Broadband Internet: The End of the Equal Voice?

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Broadband Access Project

The Center for Democracy & Technology***

As the fast-moving and hard-fought "open access to cable" debate continues – in both the United States and Canada – and perhaps moves toward resolution, it is vital to recognize that there are significant "openness" and free speech issues concerning broadband Internet access that have little or nothing to do with the cable debate. This essay looks at one such issue – an issue that is only now beginning to take shape. As described below, the emerging content distribution model on the Internet could diminish or eliminate the rough "equality of voice" between small and large speakers that is a key characteristic of the narrowband Internet. Unless those involved in creating and shaping the Internet – from network engineers to corporate leaders to public policy advocates – take steps to address this issue, we risk seeing changes in the Internet that could threaten the legal conclusion that speech on the Internet deserves the highest level of protection that the United States Constitution can afford.

When the United States District Court for the Eastern District of Pennsylvania undertook in 1996 the first comprehensive assessment of the narrowband Internet by an American court, it found what it termed "a unique and wholly new medium of worldwide human communication."[1] One key characteristic of the Internet that led the court to its conclusion was the rough "equality of voice" that exists in the narrowband Internet between small speakers and large corporate or government-controlled speakers. As Judge Stewart Dalzell of the Eastern District phrased it, "the Internet provides significant access to all who wish to speak in the medium, and even creates a relative parity among speakers."[2]

The broadband Internet, as it is now evolving, may undermine this equality of voice between small and large speakers on the Internet, and that may in turn chip away at the foundation of the sweeping First Amendment protections that speech on the Internet has been afforded by courts in the United States. The World Wide Web of the future may be one in which only large and wealthy speakers can afford to offer broadband, bandwidth-intensive, speech, while smaller speakers and publishers are relegated to offering more static and passive speech.[3]

This essay looks at the narrowband Internet and its legal context, reviews the development of the distributed broadband content delivery model, and assesses its potential impact on the ability of small speakers to speak and be heard. The essay raises questions that both policy advocates and network

engineers must address, and urges the development of a consultative process to ensure that the unique characteristics of the Internet are protected.

The Narrowband Internet and the *Reno* Court's Conclusions

In the mid-1990's, the Internet moved beyond its academic and governmental origins, and became a popular and commercial medium, with the vast majority of individual Internet users accessing the network over "narrowband" dial-up connections. The top speed of users' "last mile" connection inched up from 9.6 to 14.4 to 28.8 to 56 kbps, but the relative slowness of these connections imposed practical limits on how bandwidth-intensive any given site on the World Wide Web could be. Although sites could offer graphics-intensive Web pages, the length of time it would take to receive and view all of the graphics would often deter listeners.

The relative narrowness of the last-mile connection to Internet listeners in turn led to a "relative parity" among Internet speakers – there simply was no great advantage that money could buy. Smaller, start-up Web sites could offer content just as flashy and current as the largest corporate speaker. An individual critical of a corporation, for example, could post a web page with just as much impact as that posted by the corporation itself. Although a corporate Web site may well have more server capacity and greater bandwidth to the Internet backbone (enabling the site to respond to more simultaneous visitors), the two web sites could nevertheless speak with the same basic quality and impact.[4] This rough "equality of voice" made the Internet unique among means of mass communications – for the first time, individual and small speakers and publishers could speak to vast numbers of listeners, and could do so with content able to compete with the largest speakers. Moreover, this rough equality of voice could be achieved for a very low amount of money – individuals could post personal web pages for little or no cost, and a web site with a unique domain name could be hosted for a very low investment.

The opportunity of small and underfunded speakers and publishers to reach a wide audience on the Internet – and to do so with a rough equality of voice – made a significant impression on the three judge U.S. court that evaluated the Internet in the 1996 challenge to the Communications Decency Act.[5] In its Findings of Fact, the court concluded:

> 75. The Internet is not exclusively, or even primarily, a means of commercial communication. . . . For the economic and technical reasons set forth in the following paragraphs, the Internet is an especially attractive means for not-for-profit entities or public interest groups to reach their desired audiences. . . .
>
> 76. Such diversity of content on the Internet is possible because the Internet provides an easy and inexpensive way for a speaker to reach a large audience, potentially of millions. The start-up and operating costs entailed by communication on the Internet are significantly lower than those associated with use of other forms of mass communication, such as television, radio, newspapers, and magazines. This enables operation of their own Web sites not only by large companies . . . but also by small, not-for-profit groups . . . .
>
> . . . .
>
> 79. Because of the different forms of Internet communication, a user of the Internet may speak or listen interchangeably, blurring the distinction between "speakers" and "listeners" on the Internet. . . .

> 80. It follows that unlike traditional media, the barriers to entry as a speaker on the Internet do not differ significantly from the barriers to entry as a listener. Once one has entered cyberspace, one may engage in the dialogue that occurs there. In the argot of the medium, the receiver can and does become the content provider, and vice-versa.
>
> 81. The Internet is therefore a unique and wholly new medium of worldwide human communication.[6]

One of the judges on the District Court panel, Judge Dalzell, further explored the significance of the ability of small speakers to speak on the Internet, and concluded that the "Internet is a far more speech-enhancing medium than print, the village green, or the mails."[7] Judge Dalzell summarized the most critical factual findings of the three judge court:

> Four related characteristics of Internet communication have a transcendent importance to our shared holding that the CDA is unconstitutional on its face. We explain these characteristics in our Findings of fact above, and I only rehearse them briefly here. First, the Internet presents very low barriers to entry. Second, these barriers to entry are identical for both speakers and listeners. Third, as a result of these low barriers, astoundingly diverse content is available on the Internet. Fourth, the Internet provides significant access to all who wish to speak in the medium, and even creates a relative parity among speakers.[8]

In considering the Communications Decency Act that was before the court, Judge Dalzell sought to avoid "an Internet that mirrors broadcasting and print, where economic power has become relatively coterminous with influence."[9]

A critical issue facing both the three judge District Court panel and the United States Supreme Court on appeal was the level of First Amendment protection that should be afforded to the Internet. The debate centered on whether the Internet should receive the very high level of constitutional protection given to the print medium, or whether it should be subjected to a lower level of protection, as is the broadcast medium. Based on his analysis of the Internet, and in particular its speech-enhancing characteristics, Judge Dalzell concluded that under applicable First Amendment jurisprudence, the Internet deserved a level of constitutional protection *even higher* than that afforded to print: he concluded that protected speech on the Internet simply could not be regulated by Congress.[10]

Consistent with the U.S. Supreme Court's preference to decide cases as narrowly as possible, the Court did not reach the ultimate issue raised by Judge Dalzell – whether the Internet deserved protection even higher than that afforded to print. Writing for the Supreme Court, Justice Stevens acknowledged Judge Dalzell's conclusions, and expressly indicated that the high Court was not reaching the question.[11] Thus, the Supreme Court left open for another case the question of the full scope of the First Amendment protection that should be afforded to the Internet.

The Emerging Broadband Internet

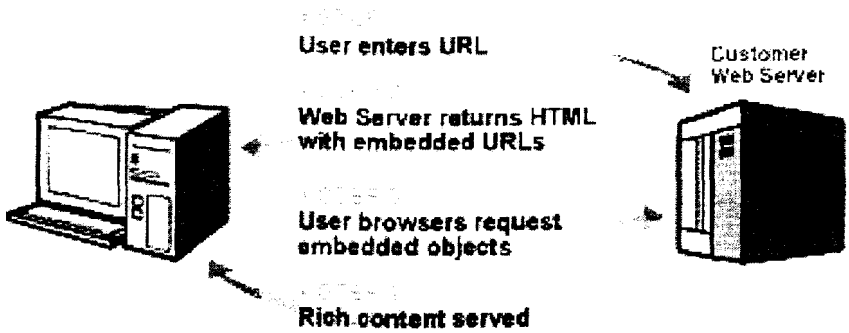
Broadband technology is fundamentally changing the distribution of content over the Internet. In the narrowband Internet, there was little incentive to optimize – in terms of network infrastructure – the distribution of content to the end user, because the end user's "last mile" connection was so "narrow" that content could be served by a single Web server[12] to end users around North America[13] about as fast as the end users could receive it.[14] In the emerging broadband world, however, a single server in Reston or San Jose or Peoria can no longer efficiently and effectively serve high-bandwidth content to users all around the Internet.

There are a number of interrelated reasons for the inadequacy of a single server for broadband content rich in multimedia and graphics.[15] First, by definition a single server is distant from many of the end users of the content, and the latency or lag time that is inherent in delivering content a great distance over the Internet reduces the quality of delivery of broadband content to the users. Second, attempting to serve – from a single server – high-bandwidth content simultaneously to many users all around the country would require a greater investment in server capacity than even some large corporations would choose to make. Finally, the cost of transmitting high-bandwidth content over the Internet backbone to users located across the Internet can be substantial.

Thus, for a host of reasons, broadband content is leading to the development and refinement of a new model of content distribution – the distributed content model. Under the distributed content model, a skeleton HTML page is commonly served from the same "single" server discussed above (located in Reston, San Jose, Peoria, or wherever), but the broadband content that is embedded with the HTML page (graphic images, video and audio clips, dynamic content, etc.) is served from a distributed network of servers located all around the United States and across the world, so that the high-bandwidth content is served to a particular user from a server located as close as possible to the user. Thus, for a hypothetical company located in Peoria, the company might create and serve a Web site from its home city, but the company would contract with a distributed content network to serve the company's video and audio content from servers located close the end users.

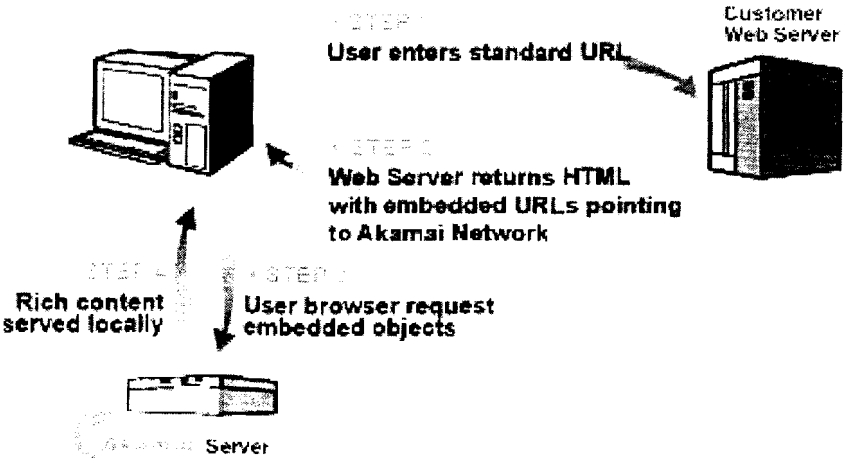
Two graphics from the Web site of one of the leading content distribution companies – Akamai Technologies, Inc. – illustrate the "before" and "after" pictures of the Internet. In Figure 1[16] (showing traffic flow without the benefit of Akamai's "FreeFlow" distributed content service), Web content is served using the traditional narrowband "single server" approach:

Figure 1: "Internet Content Delivery Without FreeFlow"



In contrast, in Figure 2 (showing an implementation of Akamai's distributed content services), the high-bandwidth content is served to the end user from a local Akamai server instead of from the original company's server located near the company's home office:

Figure 2: "Internet Content Delivery With FreeFlow"



Under this distributed content model, the high-bandwidth video and audio content is served quickly and reliably to the end user. The ultimate "Web viewing" experience of the end user is likely to be significantly better using the distributed content model than with the more traditional single server model. Akamai is far from the only company offering distributed content services. Numerous other large and small companies are offering such services, including for example the Intel Corporation and INTERVU, Inc. (in which the Microsoft Corporation has made significant investment).

Moreover, the largest "last mile" broadband provider in the United States – the At Home Corporation providing Excite@Home services to over one million cable subscribers in North America – utilizes the distributed content model in its nationwide network of cable modem systems. According to its Web site, "Excite@Home uses a hierarchical, distributed network architecture with proprietary caching and replication technology to ensure that the information a user wants is always 'as close as possible' within the network."[17]

Increasingly, content on the World Wide Web will be served from a combination of a "single" server directly controlled by the Web site owner with a network of distributed content servers controlled by Akamai, Excite@Home, or another distributed content company. This new distribution model will likely mean a smoother and more efficient experience for the Web surfers visiting those Web sites. But, as discussed below, it could leave out, and thus disadvantage, the speech of smaller speakers and publishers.

A possible – but by no means inevitable – result of the emergence of broadband and distributed content networks is the loss of the rough "equality of voice" between large and small speakers. The distributed content model is still in its infancy, and numerous questions about whether and how different (and often competing) distributed content networks will interconnect have yet to be answered. It is quite easy to envision, however, a world in which it is relatively costly to have one's high-bandwidth multimedia-rich broadband content efficiently and smoothly distributed to Internet users, and only the better-funded speakers will be able to afford to have their broadband content "distributed." In stark contrast to today's narrowband Internet (where small speakers can publish low-bandwidth content at little or even no cost), the broadband Internet may require a significant investment to publish and distribute – efficiently and effectively – high-bandwidth content.[18]

As the Internet becomes an increasingly important vehicle for companies, political figures, governments, activists, and individuals to speak to large groups of people, a disparity of quality of voice could significantly skew debates, and could undermine the Internet's contribution to open and democratic discourse. It is quite possible, for example, that an oil company would transmit multimedia and other broadband content showing that it protects the environment, but environmental activists would not be able to afford to respond with video evidence of harm done by the company. Similarly, mainstream political parties and candidates will certainly be able to use the Internet to its fullest potential to produce and distributed high quality political advertisements, but underdog and third party candidates may not be able to respond with the same quality of presentations. A President will be able to deliver a complex, multimedia presentation to the nation, but such delivery may be out of reach of presidential critics. As the Internet as a medium becomes more central, and as social and political advocacy utilizes more multimedia and broadband content, the ability of the small or underfunded speaker to afford to speak and be heard will be vital to ensuring a full and robust debate.

The "relative parity" between large and small speakers in the narrowband Internet does make the Internet a unique medium. Although the narrowband Internet will continue in the future to exist, the primary focus of Internet users will shift to broadband content and applications. As the Internet grows and becomes more popularly available, it is certainly possible that small speakers will get lost amid a sea of large and corporate voices trying to reach (and sell to) the millions of new Internet users that will "get online" in the coming years. If small and underfunded speakers cannot offer and deliver reliable and efficient broadband content at a reasonable cost, then the "speech-enhancing" qualities of the Internet may wither.

If that happens, then the Internet may lose some of the characteristics that led the District Court and the Supreme Court in the *Reno* case to afford the Internet such high constitutional protection. Other key factors – such as the Internet's general lack of scarcity – will weigh in favor of maintaining a high level of First Amendment protection. But the possibility that Judge Dalzell offered (but the Supreme Court never reached) – that the Internet deserves *even higher* constitutional protection than is afforded to print – may be lost.

Questions for the Future

This possible reduction of the ability of small speakers and publishers to be speak and be heard is not, and does not need to be, inevitable. Moreover, a reduction of speech does not serve anyone's interest (except perhaps those who might want to squelch small speakers). If small speakers cannot speak and be heard, then everyone loses, in at least three ways:

- the value of the Internet is diminished;
- the diversity of available content is reduced; and
- the risk that a government will decide to step in to enforce openness and access significantly increases.

To avoid this, however, we must strive to inject into the network architecture the ability of the small speaker to deliver – effectively and efficiently – broadband content in competition with the mass of such content offered by large speakers. More generally, we must create a mechanism for this type of issue to be considered and resolved with the public interest represented and protected. To avoid governmental imposition and management of such a mechanism, the Internet industry and community in general must develop such a consultative process.

Critically, these issues must be addressed now. Key decisions about the structure of the broadband Internet are being made now, and those decisions being carried out in the design of the network

architecture. Once those design decisions are initially made, and facilities and equipment are deployed, then retrofitting the network with an architecture that enhances speech could be very difficult. If we fail to inject public interest considerations into the design decisions at this stage, the Internet as we now know it may be lost.

In particular, the distributed content model as it is currently evolving raises questions of whether and how distributed content servers in a given local area will interconnect. In practical terms, this issue poses two interrelated questions (or, perhaps more accurately, one question viewed from two different perspectives):

> 1. **Will a speaker (a content provider) have to contract with more than one distributed content service in order to reach – effectively and efficiently – all Internet users within a given geographic area?** In other words, will a speaker be able to reach all Internet users – especially all users who have broadband "last mile" service – just by signing up with (hypothetically, for example) Akamai? Or, alternatively, will the speaker be required to sign up with Akamai, and Intel, and Excite@Home, and . . . ? Having to contract with more than one distributed content networks will likely lead to higher costs, and those higher costs will exclude some, if not many, small speakers and publishers.
>
> 2. **Will a "last mile" broadband subscriber (say a DSL subscriber with a local phone company or a cable modem subscriber with a cable company) be able to get fast and efficient access to all broadband content that resides on content servers in the subscriber's local area, or will the subscriber only have access to the distributed content affiliated with the subscriber's "last mile" broadband provider?** In other words, will an Excite@Home subscriber have fast access to the broadband content served up by a distributed content provider affiliated with a local DSL provider, and vice versa? Limiting an end user to fast access only to a subset of broadband content would be a significant step backwards from openness of the narrowband Internet.

In trying to anticipate the answers to these questions, there are at least two plausible business models that one can envision: (A) "last mile" broadband providers could strive to connect their users to as much broadband content as possible; alternatively, (B) "last mile" broadband providers could attempt to use particular broadband content as a competitive weapon against competing broadband providers (such that, hypothetically, one might be able to get superfast access to a broadband ESPN sports site over a DSL connection, while cable modem subscribers might instead have access to a broadband Sports Illustrated site). The first model would likely lead to some type of local interconnection (possibly "local peering") between broadband content servers, and that might in turn maximize the possibility that small speakers could speak and be heard (because they would only have to get on one distributed content server in an area). The second model would move away from the Internet's traditional assumption that everyone has access to most content, and might make it harder for smaller speakers to speak and be heard.

Alternatively, one could envision the ISP community, non-profit organizations, or even local governments creating "non-profit" broadband content servers and offering the content to all "last mile" providers in a local area. If such "non-profit" content servers develop across the country and then are themselves networked or interconnected, a small speaker might be able to speak with a rough "equality of voice" with the large, well funded speakers.

There are certainly no clear answers, and indeed the questions themselves are far from clear. What is clear, however, is that care and attention must be paid – by network architects, the public interest community, and others – to the question of how small speakers and publishers can continue to reach the entire Internet. As the distributed content model is refined and many as-yet-unanswered questions about the broadband Internet are addressed, it is in everyone's long term interest to preserve and carry forward the unique and speech-enhancing characteristics of the narrowband Internet.

The Internet industry (including content providers, access providers, and equipment manufacturers) must work with consumer groups and public interest advocates to ensure that First Amendment values are enhanced, not reduced, by the development and refinement of the broadband Internet. Simply put, we must find a way to ensure that these issues are raised and given appropriate weight wherever and whenever decisions about network architecture are made.

* * * * *

The Center for Democracy and Technology and The Broadband Access Project

The Center for Democracy and Technology (CDT) is dedicated to ensuring that democratic values and constitutional liberties are a central feature of the new digital age. With its unique mix of expertise – in law, technology and public policy – CDT works for practical, real-world solutions that enhance free expression, privacy, open access and democracy in the rapidly evolving global communications technologies. CDT endeavors to build consensus among all parties interested in the future of the Internet, finding common ground among activists, nonprofit groups, Internet businesses and government policymakers.

Following the passage of the Communications Decency Act in 1996, CDT helped to organize the Citizens Internet Empowerment Coalition, including leading members of the Internet industry, to challenge the constitutionality of the Act in *American Library Association/ACLU v. Reno*. This coalition wired the courthouse in Philadelphia, and the coalition's counsel argued the case in the U.S. Supreme Court.

In undertaking its Broadband Access Project, CDT seeks to ensure that the characteristics of the narrowband Internet that were so critical in *Reno*, and the resulting legal principles, continue to thrive as the Internet moves into the broadband world. The Project is looking at all forms of broadband access that are emerging as ways to reach the Internet, including cable modems, digital subscriber lines, satellites, and terrestrial wireless services. Working closely with a broad cross-section of the Internet, computer and communications industries, as well as with consumer groups and other interested parties, CDT is developing a comprehensive and balanced assessment of where the technology is today, where it can be tomorrow, and what impact (if any) the new technology will have on speech and access to content on the Internet. Among other continuing activities, the Project expects to release a report on policy and factual issues relating to openness and access in the broadband Internet in late winter, 2000.

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** Jerry Berman is the Executive Director of the Center for Democracy & Technology. In 1996, he was a principle organizer and leader of the Citizens Internet Empowerment Coalition, the industry coalition that was a plaintiff in *American Library Assocation v. Reno/ACLU v. Reno*.

*** The Center for Democracy & Technology and its Broadband Access Project are described in greater detail at the conclusion of this essay.

Footnotes

[1] *American Civil Liberties Union v. Reno*, 929 F. Supp. 824, 844 (E.D. Pa. 1996) (hereafter "*Reno* District Court Opinion") (available at http://www.ciec.org/victory.shtml).

[2] *Reno* District Court Opinion, 929 F. Supp. at 877 (Dalzell concurring).

[3] E-mail and newsgroups utilize "store and forward" protocols that do not require real time connections between speaker and listener, and thus those means of communication are less sensitive to differences in the bandwidth available to a speaker or a listener on the Internet.

[4] Without question, large and wealthy speakers on the World Wide Web have always been able to reach *more* listeners simultaneously than small speakers can commonly reach. A large corporation will often invest in a high-powered Web server and a broad pipe to the Internet backbone, and thereby gain an advantage over less well-funded speakers. The advantage, however, is not overwhelming, and a small speaker would nevertheless be able to deliver the same basic type of content, albeit a second or two more slowly than the large speaker.

[5] In 1996, the U.S. Congress passed the Communications Decency Act of 1996, which purported to regulate lawful, but "indecent," speech on the Internet, but did so in a manner that was simultaneously ineffective and very burdensome on speakers. Two separate lawsuits challenged the Act as unconstitutional. The two suits – one led by the American Civil Liberties Union and one led by the American Library Association and American Online, Inc. – were consolidated for trial and appeal. A three judge District Court struck the law down as unconstitutional. In *Reno v. ACLU*, the Supreme Court agreed, and upheld the lower court's conclusions that the Internet deserves a very high level of First Amendment protection.

[6] *Reno* District Court Opinion, 929 F. Supp. at 843-44.

[7] *Id.* at 882 (Dalzell concurring).

[8] *Id.* at 877 (Dalzell concurring).

[9] *Id.* at 878-79 (Dalzell concurring).

[10] *Id.* at 877 (Dalzell concurring).

[11] *Reno v. American Civil Liberties Union*, 521 U.S. 844, 863 n.30 (1997) (available at http://www.ciec.org/SC_appeal/decision.shtml).

[12] References to a "single" Web server are intended to encompass multiple interconnected or coordinated Web servers located at the same place. The key concept is that in the narrowband Internet, a Web site is typically served entirely from a single location.

[13] There is, unavoidably, a North American focus to this analysis of the narrowband Internet. For narrowband Web sites based in the U.S. and primarily aimed at North American listeners, there was little incentive to serve Web content from multiple locations around the continent. For U.S.

Web sites that sought to develop a strong overseas audience, there was incentive to "mirror" sites on a European and/or Asian server, and such mirroring occurred long before the distributed content model emerged to speed the delivery of broadband content.

Caching has also been widely implemented as a way to speed delivery of content to users and reduce the need for ISPs to pay backbone charges to repeatedly retrieve popular content from across the Internet. Significantly, however, caching typically speeds the most *popular* content, regardless of whether it is high-bandwidth or not, and caching will speed content from small speakers just as it does for larger speakers – if the content is popular.

[14] Over time in the narrowband world (especially since the rise of streaming audio and video content), the assumption that a single server was sufficient has been increasingly questioned. It is the emergence and widespread deployment of broadband "last mile" services, however, that has made the inadequacy of the single server model clear.

[15] For a detailed discussion of the economic and technical factors that make serving broadband content from a single server location, see Kim Maxwell, Residential Broadband at 106-21 (John Wiley & Sons 1999).

[16] Both Figures 1 and 2 are drawn from http://www.akamai.com/service/howitworks.html (viewed Feb. 3, 00), and are Copyright © 1999-2000 Akamai Technologies Inc.

[17] http://www.home.net/about/network.html (viewed Feb. 3, 00).

[18] None of this is to criticize the distributed content model. Distributing content to local servers is certainly one of the most efficient and effective approaches to delivering high-bandwidth content to users located across the Internet. This essay does not argue against distributing content, but instead advocates trying to shape the distributed content model to maximize the ability of small and underfunded speakers to be able to distribute broadband content along side larger and wealthier speakers.